

WHAT IS CLAIMED IS:

1. A solder paste printing method comprising the steps of:

dispose a plate-shaped mask having a plurality of through  
5 holes formed to correspond to a plurality of connection terminals,  
over a printed face of a substantially polygonal wiring substrate  
having a side of a length of at least 300 mm and having the  
connection terminals in the printed face;

forming solder-printed layers by moving a squeegee along  
10 an outer face of the mask while holding the squeegee in contact  
with the outer face of the mask, thereby to fill the through  
holes with a solder paste; and

detaching the mask by disengaging one side edge of the  
mask disposed over the printed face of the wiring substrate,  
15 relatively from the printed face.

2. A solder paste printing apparatus comprising:

a wiring substrate holder for holding a substantially  
polygonal wiring substrate having a side of a length of at least  
20 300 mm and a plurality of connection terminals in a printed  
face;

a plate-shaped mask having a plurality of through holes  
formed to correspond to the connection terminals, which is to  
be disposed over the printed face of the wiring substrate;

25 a squeegee for moving along an outer face of the mask

while being held in contact with the outer face of the mask,  
to fill the through holes with a solder paste thereby to form  
solder-printed layers; and

detachment means for disengaging one side edge of the  
5 mask disposed over the printed face of the wiring substrate,  
relatively from the printed face thereby to detach the mask.

3. A method for manufacturing a wiring substrate having  
solder-printed layers, comprising the steps of:

10 disposing a plate-shaped mask having a plurality of  
through holes formed to correspond to a plurality of connection  
terminals, over a printed face of a substantially polygonal  
wiring substrate having a side of a length of at least 300 mm  
and having the connection terminals in the printed face;

15 forming solder-printed layers by moving a squeegee along  
an outer face of the mask while holding the squeegee in contact  
with the outer face of the mask, thereby to fill the through  
holes with a solder paste; and

detaching the mask by disengaging one side edge of the  
20 mask disposed over the printed face of the wiring substrate,  
relatively from the printed face.

4. The method according to claim 1, wherein a speed of  
the moving of the squeegee is at 20 mm/sec or less.

5. The solder paste printing apparatus according to claim 2, wherein a speed of the moving of the squeegee is at 20 mm/sec or less.

5 6. The method according to claim 3, wherein a speed of the moving of the squeegee is at 20 mm/sec or less.

7. The method according to claim 1, wherein a printing pressure of the squeegee is at 7.5 Kgf or more.

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8. The solder paste printing apparatus according to claim 2, wherein a printing pressure of the squeegee is at 7.5 Kgf or more.

15 9. The method according to claim 3, wherein a printing pressure of the squeegee is at 7.5 Kgf or more.

10 20 10. The method according to claim 3, wherein the printed face is covered with a solder resist having openings, the solder-printed layers are flip chip bumps formed over the connection terminals exposed through the openings, and a protrusion height of the flip chip bumps from a surface of the solder resist is at least 20  $\mu$ m.

25 11. The method according to claim 10, wherein the solder

resist has a thickness of at least 5  $\mu\text{m}$ .

12. The method according to claim 10, wherein the solder resist has a thickness of at least 10  $\mu\text{m}$ .